UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,971	08/17/2001	Shun-An Chen	0941-0306P-SP	1826

2292 7590 01/17/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER
SUN, XIUQUIN

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,971	CHEN ET AL.	
	Examiner	Art Unit	
	Xiuqin Sun	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. (U.S. Pat. No. 5067099) in view of Nara et al. (U.S. Pat. No. 6388747 B2).

McCown et al. teach an apparatus and method for dynamically monitoring system performance (see abstract; col. 4, lines 3-16 and lines 40-44), comprising: a data processor analyzing the inspection results to determine a second sampling rate (col. 20, lines 27-52; col. 24, lines 53-68 and col.25, lines 1-7); a device storing the second sampling rate (col. 25, lines 17-39); a controller receiving said second sampling rate from the storage device and changing said first sampling rate of the inspection requested by the process controller to said second sampling rate (col. 20, lines 27-52; col. 24, lines 53-68 and col.25, lines 1-7); an input device connected to the storage device for inputting of user-defined data (such as a user-defined sampling rate) (col. 18, lines 15-26).

McCown et al. do not mention explicitly: a process executor requesting a plurality of semi-manufactured products processed by the manufacturing

equipment to be inspected at a first sampling rate and receiving a plurality of inspection results; a display connected to the storage device, displaying the first and the second sampling rates.

Nara et al. disclose a inspection method, apparatus and system for circuit pattern, and teach: a process executor for requesting a plurality of samples processed by the system to be inspected at a first sampling rate and receiving a plurality of inspection results (see Figs. 2 and 4; col. 8, lines 45-67; col. 9, lines 1-7, lines 37-50; col. 10, lines 62-67; col. 11, lines 1-17; col. 28, lines 58-67 and col. 42, lines 14-24). Nara et al. further teach a display connected to the storage device, displaying the sampling rates for the inspection process (see Fig. 25 and col. 28, lines 27-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Nara process executor and display in the McCown system in order to automatically execute the parameter setting and data process in parallel with the inspecting operation (Nara, col. 2, lines 53-65), and display the output in a user-friendly GUI format (Fig. 25).

It is also obvious that the apparatus and method taught by McCown et al. is broad enough and applicable to monitoring the stability of manufacturing equipment, because any manufacturing equipment can be treated as an individual instance or a part of the system taught by McCown et al., and the stability of the manufacturing equipment is simply one specific characteristics of the system performance under monitoring by the McCown apparatus and

method. Therefore, it would have been obvious to apply the McCown apparatus and method to a plurality of semi-manufactured products processed by manufacturing equipment in order to provide a system for dynamically monitoring the stability of the manufacturing equipment.

3. Claims 4-5 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al. as applied to claim 1 above, and further in view of Li (U.S. Pat. No. 6276997).

McCown et al. teach a method and apparatus that includes the subject matter discussed above except that: a semiconductor manufacturing process that is capable of etching the semi-manufactured products such as a wafer and a technique for forming an oxide layer on the semi-manufactured products.

Nara et al. teach a semiconductor manufacturing process that is capable of etching the semi-manufactured products such as a wafer (see Fig. 5 and col. 11, lines 43-67).

Li discloses a method and system and teaches: a technique for forming an oxide layer on the semi-manufactured products (col. 2, lines 12-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the teaching of Nara semiconductor manufacturing process and Li oxide layer formation technique in the McCown apparatus in order to apply the stability monitoring to semiconductor manufacturing process such as etching a semiconductor wafer (Nara, col. 1, lines 29-41; and Li, col. 2, lines 12-21).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al. as applied to claim 1 above, and further in view of Sandoval (U.S. Pat. No. 6345259).

McCown et al. and Nara et al. teach a method and apparatus that includes the subject matter discussed above except that: the process executor is a Manufacturing Executive System (MES).

Sandoval teaches a Manufacturing Executive System (MES) that serves as a process executor used in a computer integrated manufacturing environment (col. 4, lines 27-33; col. 11, lines 6-16 and lines 29-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the teaching of Sandoval MES in the system of McCown and Nara in order to provides an automated, multi-directional computer integrated manufacturing system and to enable computer integrated manufacturing (Sandoval, col. 4, lines 25-36).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al. as applied to claim 1 above, and further in view of Webster (U.S. Pat. No. 5505090).

McCown et al. and Nara et al. teach a method and system that includes the subject matter discussed above except that: the inspection of the semi-manufacturing products is non-destructive.

Webster teaches a method and apparatus for non-destructive inspection of composite materials such as the semi-manufacturing products (see abstract) by sampling the products at a given sampling rate (col. 9, lines 32-50).

It would have been obvious to include the teaching of Webster technique for non-destructive inspection of semi-manufacturing products in McCown and Nara system in order to provide a practical technique non-destructively locating faults in composite structures which is suitable not only for in-plant non-destructive evaluation but for field use as well (Webster, col. 1, lines 32-42).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al. as applied to claim 1 above, and further in view of Schmolke et al. (U.S. Pat. No. 6333785).

McCown et al. and Nara et al. teach a method and system that includes the subject matter discussed above except that: using a thickness of an oxide layer as a standard for inspection.

Schmolke et al. teach a method in which the thickness of an oxide layer is used as the standard in inspecting a smooth surface of semiconductor wafers (col. 3, lines 45-60 and col.4, lines 1-5).

It would have been obvious to include the teaching of Schmolke inspection of thickness of an oxide layer in McCown and Nara system in order to provide a system for quality inspection of a semiconductor object that uses the thickness of an oxide layer as a standard for inspection (Schmolke, col. 3, lines 45-59 and col. 4, lines 1-5).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al., and further in view of Charles (U.S. Pat. No. 6335559).

McCown et al. and Nara et al. teach a method and system that includes the subject matter discussed above except that: using an etching depth as a standard for inspection.

Charles teaches a method and device that can monitor the operation of etching a semiconductor wafer by inspecting the etching depth (col. 7, lines 36-53).

It would have been obvious to include the teaching of Charles inspection of etching depth in McCown and Nara system in order to conduct quality inspection of a semiconductor object by examining the etching depth as a standard for inspection (Charles, col.7, lines 36-53).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable McCown et al. in view of Nara et al., and further in view of Hinkle (U.S. Pat. No. 6190313).

McCown et al. and Nara et al. teach a method and system that includes the subject matter discussed above except that: the data processor is an SPC analyzing software application.

Hinkle teaches an Statistical Process Control (SPC) analyzing software application used as a data processor in processing and analyzing the data in question (see abstract; col. 2, lines 59-61 and col. 3, lines 49-61)

It would have been obvious to include the teaching of the Hinkle SPC analyzer in McCown and Nara system in order to perform a SPC analysis on the indexed data records (Hinkle, abstract).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCown et al. in view of Nara et al., and further in view of Juszkiewicz et al. (U.S. Pat. No. 6353169).

McCown et al. and Nara et al. teach an apparatus and method that includes the subject matter discussed above except that: said controller is a server.

Juszkiewicz et al. teach a controller that has the capability of converting sampling rates (col. 13, lines 24-38), and the controller is of the functionality of a server (col. 3, lines 62-65).

It would have been obvious to include the teaching of Juszkiewicz et al. server type of controller in the McCown and Nara system in order to dynamically configure the system and control the operation of the system (Juszkiewicz, col. 3, lines 62-67 and col.4, lines 43-45).

Response to Arguments

10. Applicant's arguments filed 11/05/2002 with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-13 are rejected as new art (U.S. Pat. No. 6388747 B2) has been found to teach the following subject matter: a process executor requesting a plurality of semi-manufacturing products processed by the manufacturing equipment to be inspected at a first sampling rate; a display connected to the storage device, displaying the sampling rates for the inspection process; and a semiconductor manufacturing process that is capable of etching the

semi-manufactured products such as a wafer. For detailed response, please refer to sections 2-3 set forth above in this Office Action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

XS
January 11, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800